VOL. 8 NO. 4

Economics and Business BULLETIN

JUNE, 1956

TEMPLE UNIVERSITY
SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION

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JUNE, 1956

ECONOMICS AND BUSINESS BULLETIN

OF THE

SCHOOL OF BUSINESS AND PUBLIC ADMINISTRATION

Published by the
BUREAU OF ECONOMIC AND BUSINESS RESEARCH
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Committee for Economic and Business Research

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Work Measurement in the Department of Defense —Its Uses and Appraisal[1]

by SAMUEL M. WILSON*

This is the fourth and final article in the series on "Work Measurement in The United States Department of Defense". Work measurement has been developed as a multi-purpose technique for management's use. This article not only emphasizes the uses of work measurement but also presents an appraisal of the accomplishments and potentialities of the system.

WORK measurement is used by the Armed Services for the following purposes: (1) to compare the performances of similar organizations over a period of time, (2) to plan, allocate and control manpower, (3) to prepare and submit performance type budgets, and (4) to accomplish other improvements in manpower management, especially at the operating levels. The first part of this article gives a description of each of these uses.

COMPARISONS OF SIMILAR ORGANIZATIONS

Even before the work measurement systems have been in operation long enough to provide the necessary data for setting standards, they furnish data for comparing organizations which are performing common types of work. For example, the Navy's work measurement system provided data for the following comparisons among organizations performing similar work measurement functions, subfunctions, and operations: (1) workloads accomplished; (2) backlogs of work scheduled at the end of report periods; (3) productive manpower separated on the basis of military and civilian personnel; (4) overtime separated on the basis of military and civilian personnel; (5) nonproductive time separated on the basis of military and civilian personnel; (6) total number of personnel employed at the end of the report period, separated on a basis of military and civilian personnel; and, (7) production or performance rates.

Much of the above data, together with the percentages and ratios which are developed from them, have been tabulated and used by Naval organizations. For example, the Comptroller of the Navy utilized work measurement data to compare the production rates and unit costs of the different Bureaus of the Navy which perform certain common functions. Table 1 illustrates the manner in which the work measurement data were utilized for the fiscal services work measure operation of "payroll, leave, and retirement" in the continental United States for the fiscal year 1951. Column one identifies the name of the Naval Bureau or Office. The total man-years, which included the man-year equivalent for elec-

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[1]See Samuel M. Wilson "Work Measurement in the Department of Defense — Its Background and Beginning", "Its Requirements" and "Establishing Performance Standards", ECONOMICS AND BUSINESS BULLETIN, Vol. 8, No. 1, No. 2, and No. 3, September and December, 1955, and March 1956, respectively.

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The writer wishes to acknowledge the assistance of many government employees who have been of vital aid in the development of this article. The list is too long to present here in full, but the assistance of James F. Barie and Frank Krause, the Office of the Director, Bureau of the Budget; Major General E. C. Lynch and Ralph P. Sollett, of the Office of the Assistant Secretary of Defense (Manpower and Personnel); Lieutenant Commander Robert P. Benz and Nathan Schacter, of the Office of the Navy Management Engineer; Dr. Paul D. Gard, of the Office of the Assistant Chief of Staff, G-1, Department of the Army; Lieutenant Colonel Warren K. Watson and Major Dale R. Fleming of the Office of the Deputy for Manpower and Organization, Department of the Air Force; William Gill, Management Consultant, Department of the Army; and Colonel A. J. Roose, Supply Department, Marine Corps was of particular value and is gratefully acknowledged.

TABLE 1

REPORT ON FISCAL COMMON SERVICES OF THE DEPARTMENT OF THE NAVY, FISCAL YEAR 1951 (ACTUAL)*

Work Measurement Operation: Payroll, Leave, and Retirement (Continental United States Only)

1	2	3	4	5	6
(Field Activities)	Time (Man-Years)	Salary Obligations	Workload (Persons Payrolled)	Production Rate Col. (4)÷Col. (2)	Unit Labor Costs Col. (3)÷Col. (4)
Bureau of Aeronautics	400.0	$1,616,296	72,216	181	22.38
Bureau of Supplies and Accounts	446.6	1,624,887	66,393	149	24.47
Bureau of Personnel	17.5	70,160	3,592	205	19.53
Bureau of Ordnance	337.8	1,444,497	57,167	169	25.27
Bureau of Ships	608.7	2,531,624	121,649	200	20.81
Bureau of Yards and Docks	31.4	135,188	4,102	131	32.96
Bureau of Medicine and Surgery	43.7	156,749	8,440	193	18.57
U. S. Marine Corps	76.5	291,600	15,689	205	18.59
Office of Naval Research	15.9	55,656	3,187	200	17.46
Chief of Naval Operations	39.1	158,536	6,482	166	24.46
Field Activities Total	2,017.2	$8,085,193	358,917	178	22.53

*Based of 3rd and 4th Quarters, Fiscal Year, 1951.

Source: United States Department of the Navy, Comptroller of the Navy, Washington 25, D.C., February 11, 1951

trical accounting machine costs,[2] consumed on this work measurement operation are presented in column two. Salary expenditures are shown in column three. The number of persons payrolled, i.e., the total workload, is given in column four. The production rates (column five) are expressed as the number of persons payrolled per man-year, i.e., the average number of persons on the payroll for each person doing payroll work during the fiscal year, 1951. Unit labor costs, i.e., dollars per person payrolled, are calculated by dividing the total salary obligations of those persons performing this operation, (column three) by the number of persons payrolled (column four). Production rates and unit costs used in this or a somewhat similar manner were the primary tools for comparing manpower utilization among organizations before the establishment of standard rates.

The Utilization Index

Utilization indexes can be used only after standards have been established because they are based on standard rates. An utilization index is computed as follows:

> The number of work units completed is multiplied by the performance rate standard. The product is the standard productive time which represents the total productive time it would have required to perform the given workload if performing at the standard performance rate. The standard productive time is divided by the actual productive time taken to perform the workload and the quotient is multiplied by 100. This product is the manpower "utilization index" for the function, sub-function, or operation. It is expressed as a percentage ratio which has also been called in the Armed Services by such terms as "effectiveness index," "effectiveness," "effectiveness indicator," "performance index" and "utilization."

In general, if the utilization index is more than one hundred, the organization is utilizing its manpower better than it would if performing at standard, i.e., it

[2]In the Navy manpower equivalents of electrical machine costs are added to the actual manpower in order to present a more comparable picture because some of the bureaus and offices do not use electrical accounting machines.

is using less manpower than would have been used when performing at the standard rate. Conversely, if the utilization index is less than one hundred, the organization is not utilizing its manpower as effectively as if it were performing at standard.

Planning and Controlling Manpower

One of the primary reasons for establishing work measurement systems in the Armed Services was to provide the means for formally planning and controlling manpower. After standard rates have been set, the work measurement data are used to evaluate the utilization of manpower requirements.[3]

The periodic reports contain manpower data on the basis of total productive time (including overtime) and total nonproductive time. Since overtime does not represent additional people, it must be eliminated from the total productive time when converting the productive time into number of people.[4] Moreover, nonproductive time must be added to the net productive time (total productive time minus overtime) in order to provide for the total personnel equivalent including nonproductive time. The subtraction of overtime and the addition of nonproductive time are important steps in the utilization of work measurement data for overall manpower planning and control. Using work measurement data for determining manpower requirements starts with recognition of the fact that the performance or production rates and standards are based on data which include overtime and exclude nonproductive time.

For example, the work measurement data reported during the last quarter of fiscal year 1951 by the Naval Air Station, Pensacola, Florida, for the industrial relations function have been used by the Navy Management Engineer to demonstrate the need for excluding overtime and including nonproductive time in arriving at the actual number of people used or required. Fifty-eight productive man-months and 5,358 work units were used in computing the performance rate of .0108 man-months per work unit for this function at this field activity. The equivalent of seven man-months of overtime had been recorded and included in the total productive time reported. In addition, six nonproductive man-months had been reported for this function. Therefore, an average of fifty-one people had actually been working in this function and these fifty-one persons had worked an average of seven man-months of overtime. These seven man-months of overtime, while not representing additional people, did represent time spent on the job and had been considered as time required to produce the work units accomplished. They, therefore, influenced the performance rate.

The six nonproductive man-months also represented the time when the personnel of this function were off their jobs and did not, therefore, contribute directly to the work units accomplished or to the performance rate. Under this situation, it is essential that when the standard rate is used to translate future workloads into manpower requirements overtime must be subtracted from and the nonproductive time must be added to the net productive time in order to produce the total personnel requirements.

Administrative Variances

The Navy's work measurement system provides for necessary administrative variances which represent local or unique conditions within an activity causing it to be performed either above or below the standard. This variance is used just before the final determination of manpower ceiling requirements.

The administrative variances are considered necessary because the rigid use of standard rates with appropriate tech-

[3]Forecast workloads are converted into manpower requirements in order to plan for manpower allocations and ceilings for future periods.

[4]Any productive time worked by personnel outside the reporting organization is usually kept separately and must also be subtracted from the total productive time when determining the total people within the organization who worked in this work measurement area.

nical variances creates problems for local commanders. A blind application of rigid and uniform work measurement techniques at any level of management for all functions and all activities would render the system inoperable.[5] Standard rates should not be overstressed and performance above standard should not necessarily represent grounds for commendation. The diversity of seemingly very similar work measurement areas and the heterogeneity and varying degree of magnitude of military operations make it imperative to allow administrative variances which are practical demonstrations that the standard rates are averages and therefore represent points or central tendencies within ranges of rates. In other words, since standard rates statistically represent central tendencies, their application must allow for necessary variations from these standards. In addition, numerous variations and differences in local conditions escape being reflected directly in work measurement data; however, these conditions have to be considered in determining final manpower requirements.

The Follow-Up Reports

A fundamental requirement in the operation and use of a work measurement system as a technique which has been prescribed throughout the Navy is that of returning periodically a consolidated analysis and evaluation of the work measurement data to the various organizations which have furnished that data. A variety of reports have been used, and for the purpose of this study all such reports are referred to as follow-up reports. Overall bureau analyses and evaluations are performed by and promulgated from the bureau or corps levels; however, detailed follow-up data and information are used at organizational levels which combine, analyze, or furnish the work measurement data to higher levels.

The follow-up reports are the means by which the management at each level of each reporting activity compares selected work measurement data and performances of their functions, sub-functions, and operations with similar data and performances of other activities. These reports give management at the bureau or corps level, and also the management at each lower level of an activity, an opportunity to point out data of questionable accuracy, any notable discrepancies in reporting, misinterpretation of instructions, misuse of the data, and any other features which improve the work measurement system. The follow-up reports act as an alarm system which points out to the management those organizational units which are having difficulties as revealed by their work measurement reports. For example, the Navy lists the following difficulties which are revealed by the follow-up reports.[6]

1. Improper personnel utilization.
   a. Overstaffing is frequently discovered, especially when workloads have fallen off and personnel has not been reduced.
   b. Overall personnel may be adequate but may not be equitably distributed so as to maintain a balanced effort.
   c. Individuals may lack training.
   d. Individuals may be using inefficient methods of work.
2. It may be found that the equipment being used is run down, inadequate or not being efficiently utilized.
3. The organization of the activity may not provide a healthy system of working relationships.
4. Procedures for the performance of work may be inadequate with such things as back-tracking and delays slowing down production.
5. The distribution of the work, like the distribution of the personnel, may be unbalanced among organizational units.

An organization generates and reports through the proper channels of command a large amount of work measurement data. The knowledge that

[5]Under Secretary of the Navy's letter, "The Navy Shore Establishment Work Measurement System, Establishment of" Department of the Navy, Washington, D. C., Chapter 1, Part C, p. 33.

[6]United States Department of the Navy, **Manual for the Integrated Work Measurement Program,** Washington 25, D. C., 1950, p. 14.

these data exist and the awareness that this factual information reflects both favorable and unfavorable conditions which exist throughout an organization stimulates an interest on the part of management in exploring the comparative performance of unit organizations. Management takes the follow-up work measurement data which have been returned to it and examines the performance even down to the smallest organizational segment, and sometimes each individual worker, in order to determine why parts of the organization are unreasonably below the standard and why others are appreciably above the standard. Sources of trouble are usually determined by examining the possible causes of the difficulty, and when necessary, studies are conducted to formulate the actions necessary to eliminate the difficulty.

Utilization indexes provide substantial incentives at each organizational level if they represent comparable and similar work measurement data and if their uses are stressed in the proper manner. Most managers and supervisors do not like to see their performances below standard, a condition which may be interpreted as meaning that their units are reducing the effectiveness of the entire organization.

Preparation and Submission of Performance Type Budgets

The Bureau of the Budget identifies the processes used in formulating the federal budget by the term "performance budgeting." Performance budgeting is defined as the classification of operating costs with identifiable budget activities and major component functions,[7] and includes the procedure of relating the amount to be accomplished with the dollar requirements necessary for this accomplishment. The term, budget activity, is the first subdivision or classification of an appropriation by Congress. A budget activity is defined as a "particular complete plan of action to be undertaken to accomplish a specific mission."[8] All the work measurement functions of the Navy fall within budget activities. The proper identification and classification of the work measurement functions, so that they will systematically

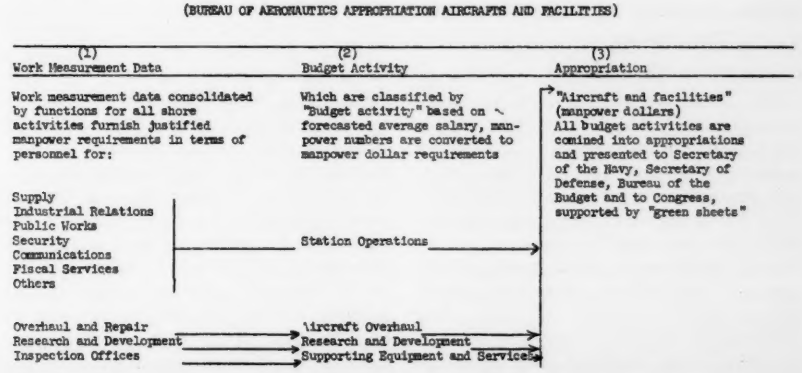
[7]Department of the Navy, **The Navy Shore Establishment Work Measurement System Manual, op. cit.,** p. 39.

[8]Loc. cit.

FIGURE 1

USING WORK MEASUREMENT DATA IN PERFORMANCE BUDGETING

(BUREAU OF AERONAUTICS APPROPRIATION AIRCRAFTS AND FACILITIES)


(1)
Work Measurement Data
(2)
Budget Activity
(3)
Appropriation
Work measurement data consolidated by functions for all shore activities furnish justified manpower requirements in terms of personnel for:
Which are classified by "Budget activity" based on forecasted average salary, manpower numbers are converted to manpower dollar requirements
"Aircraft and facilities" (manpower dollars)
All budget activities are comined into appropriations and presented to Secretary of the Navy, Secretary of Defense, Bureau of the Budget and to Congress, supported by "green sheets"
Supply
Industrial Relations
Public Works
Security
Communications
Fiscal Services
Others
Station Operations
Overhaul and Repair
Research and Development
Inspection Offices
Aircraft Overhaul
Research and Development
Supporting Equipment and Services

Source: U. S. Department of the Navy, Navy Management Engineer, Washington 25, D. C.

fall within a specified budget activity, are essentially the requirements which make performance budgeting for manpower possible.

Figure 1 presents the general approach necessary for building the manpower budget based on the use of work measurement data. The Bureau of Aeronautic's budget activities of station operations, aircraft overhaul, research and development, and supporting equipment and services were used to illustrate how the manpower dollar requirements are derived for the appropriation, aircraft, and facilities. The work measurement data covering all functions performed by the Bureau's shore activities are consolidated on the basis of each function in order to forecast total annual manpower requirements. The annual requirements forecast for each function are translated into manpower dollar requirements under each budget activity on the basis of average salary forecast, taking into consideration differences between military and civilian salaries. The final step is the consolidation of budget activities under their respective appropriations in order to determine the total manpower dollar requirements for the appropriation requests which are presented in due course to the Secretary of Defense, Bureau of the Budget, and the Congress, along with the "green sheets" which are designed to support the budget dollar requests for civilian personnel.

Accomplishing Other Improvements in Manpower Management

The three Armed Services use work measurement to improve overall management planning and control. Evaluating manpower utilization, determining periodic manpower requirements, and planning for manpower budgetary requirements are essential purposes in establishing service-wide work measurement systems. In addition, however, one of the principal purposes of the work measurement systems is to supply management at all levels of each organization with a variety of accurate data and information which are used to point out and assist in the solutions of operational problems. To be truly successful, a work measurement system must not only be needed but also used extensively by the organization where the work is being performed and the data are being generated. The operating level is the place where the supervisors and management can use the work measurement data and techniques in managing personnel and workloads in a detailed manner. In other words, this is the place (the operating level) "where the pay-off, good or bad, occurs."

The brief explanations which follow cover several of the important ways work measurement data have been used, particularly at the operating levels.

Basis for Planning and Scheduling Work

The work measurement system provides a factual basis for planning and scheduling work. This is the managerial function which determines where, how, how much, when, and by whom, the work of an organization is to be performed. If a planning unit or the personnel who are responsible for planning have factual data available concerning these factors and do not have to depend on rough estimates, their plans are noticeably more realistic and result in more effective operations. By applying performance experiences to the estimated workloads on each job to be done, it is possible to determine in a reasonably accurate manner the time which will be required to accomplish the work. This technique is particularly useful not only in estimating personnel requirements, but also in shifting employees from one type of work to another or even from one organization to another to meet anticipated changes in workloads. Detailed scheduling of work through an activity is impossible without reliable information as to how much time each operation requires. Work measurement provides the data needed by the persons doing such scheduling.

Indicates Problems of Workload Variations

Abnormal fluctuations of workloads and backlogs of work sometimes indicate the need for a more flexible working force in order to reduce excessive variations in manpower utilization. A high degree of utilization usually requires that a minimum backlog of work be maintained in order to assure continuous operation unless employees are shifted from one job to another. An organizational segment that maintains a stable personnel strength and also a completely current work status in spite of workload fluctuations may be overstaffed. If this is the case, steps to correct this situation involve either the transfer of personnel among understaffed units or attempts to eliminate the workload fluctuations by using one or a combination of the various possible methods to stabilize or level out the workload. The work measurement reports, particularly the daily feeder reports and records, help detect excessive workload fluctuations. In addition, backlogs of work are kept on a daily basis for work measurement purposes in many organizations.

Basis for Controlling Production

The work measurement systems provide a basis for management control, which is the function of administration that compares results with the planned objectives to determine whether the work assigned has been accomplished. Control provides management with the techniques and information necessary to carry on effective operations. Control data and information in the form of work measurement reports along with supplemental information are generated at the operational level and passed on through the various levels of command and are used at each level as a "spring board" for appropriate action.

Evaluation and analyses which cover less than one annual quarter may require some additional information or supplementary data not normally provided as a minimum requirement for the quarterly work measurement reports. This additional information usually relates to planning criteria and factors which are used to determine production goals for specified periods. If production goals are established in terms of quotas for the reporting periods, the percentage of achievement as well as the effectiveness and overall progress toward the goal can be computed and shown graphically or in tabular form. Thus, work measurement data along with other necessary production information is used even on an hourly or day-to-day basis to determine effectiveness of an individual or a group of people in meeting production goals.

Control of Time Used on Unmeasured Work

Some work areas have no work units assigned and no direct way of measuring the amount of work accomplished. In this case such areas are known as unmeasured work. Controlling manpower expended in unmeasured work areas is an important consideration in the use of most work measurement systems because these areas may constitute a significant part of the work force. Unmeasured work represents an area where there is a tendency to place productive time which should be charged against measured work. If this is done, the performance in the measured areas will be unduly high. A great deal of care must be taken in associating and allocating manpower in an accurate and honest manner among the appropriate work measurement areas. Comparing the unmeasured time consumed among similar organizational components over an extended period of time should detect any unwarranted use of the unmeasured areas in reporting manpower.

Control of Nonproductive Time

Nonproductive time represents the time for which a person is being paid but the organization is not receiving his services in a direct way. A normal amount of nonproductive time is necessary; however, the work measurement

data may reveal that nonproductive time is abnormally high. This may result from several causes. For example, military personnel may be performing other military duties which do not fall within the mission of the particular organization. Again, the personnel may be taking too much time off during the normal working period for sports or other forms of recreation. The work measurement system will not solve this problem, nor will it solve, **per se**, any other problem. The system, however, will point out the problems and provide a factual basis for their solution. It is not intended to convey the idea that improvements are accomplished directly by the work measurement system. This is done by conscientious management after the system has made the facts and data available.

Use in Efficiency Award Program

President Truman by Executive Order 10072, in July, 1949, and the Eighty-first Congress by Public Law 429, passed in the same year, emphasized the need for continuous examination and review of governmental operations as an act of insuring that planned programs in each department are being effectively achieved. Title X of Public Law 429 makes specific provisions for the establishment of an efficiency awards system in each government agency. Individuals, groups of individuals, or organizations which make outstanding contributions toward the efficiency and economy in governmental operations qualify for both financial and non-financial awards. Work measurement systems not only provide techniques for continuous examination and review but also furnish factual information and data pertaining to performance of work which are used to appraise and justify quantitatively the effectiveness of those individuals, groups, or organizations nominated for efficiency awards.

Other Specific Benefits

A continuing work measurement program should yield many other benefits. The ramifications of the program virtually penetrate the entire organization. Some of the additional specific uses of work measurement are:

1. Forecasting the impact of contemplated changes in organization, procedures, and equipment;
2. Appraising the effects of changes previously made in organization, procedures and equipment;
3. Testing the feasibility of work projects before they are approved or launched;
4. Correcting shortages in supplies and equipment;
5. Improving the quality of supplies, equipment and facilities;
6. Improving the quality of supervision by pointing out the need for better selection, testing, training or other personnel requirements;
7. Improving or accelerating existing training programs;
8. Pointing out areas where it appears appropriate to investigate the need to inaugurate or stimulate interest in work simplification;
9. Identifying outstanding performance, either by individuals or groups, and making appropriate citations and awards;
10. Anticipating fluctuations or shifts in personnel requirements;
11. Stimulating participation in employee suggestion programs;
12. Observing improvement trends over a period of time;
13. Auditing Tables of Organization and Tables of Distribution;
14. Assigning additional work to organizations;
15. Improving the classifications of duties performed;
16. Determining labor costs in cost accounting programs;
17. Developing interest in the application and use of time and motion studies, and other advanced management engineering techniques, such as methods-time-measurement and the "work-factor" system;
18. Increasing interest in establishing more direct and indirect financial incentives in order to increase effectiveness;
19. Improving selection and placement of personnel;
20. Creating better job descriptions and job instructions; and,
21. Pointing out the need for special

FIGURE 2

SUMMARY OF THE WORK MEASUREMENT SYSTEM

(NAVY DEPARTMENT)

The Manpower Management Problem: The Congress, President, Bureau of the Budget and Military Management want to know where the military services are performing what missions. How much work is being accomplished with how much manpower? How much manpower will be required to perform how much work in a future period? How is the use of manpower evaluated? How are manpower requirements determined? What techniques are used to provide incentives for whole organizations and organizational segments, operating groups and individuals?

The Navy's Answer:
Work Measurement System (Coordinated with Other Management Control Systems)

Scope of Manpower Management		Periodic Reports Provide the Data and Analysis for the Following Requirements	
Manpower Areas:	Operating Forces--Fleet Unavailable Forces--Pipeline Working Forces--Ashore	PAST EXPERIENCE	FUTURE REQUIREMENTS
Types of Control:	Technical = Workload Management = Manpower Financial = Dollars	Evaluation of Performance (Control and Follow-Up)	Determination of Manpower Requirements (Planning for the Future)

Management and Measurement Structure

Levels No.	Name	Example	Work Units	
1	Secretary of the Navy	Working Forces Shore Establishments	Work Units are defined and designated for functions, sub-functions, and operations by coordinated action of first three levels	The utilization of manpower over the past period is evaluated through a column by column reporting and calculating the productive, non-productive, and overtime manpower used, work units completed, the performance rates compared with the standard rate (with technical variances); standard manpower used compared with actual manpower used; and, the computation of the utilization index for the three levels of operation, sub-function, and function.	Column by column reports may give manpower requirements which are determined for each function, sub-function, and operation by using a workload forecast multiplied by standard rates. Then, adjustments are made for technical variances, overtime and non-productive time plus or minus any justifiable administrative variances. Actual manpower on board is increased or decreased to conform to requirements at or above standard.
2	Bureau of Office	Bureau of Aeronautics			
3	Activity	Naval Air Station Pensacola			
4	Functional	Supply	Tons Handled		
5	Sub-function	Storage	Line items to and from storage		
6	Operation	Materials Handling	Measurement tons		
7	Task, Individual Job	None defined	None defined	The shore establishment work measurement system has been designed to evaluate the past utilization of manpower and to determine manpower requirements for forecast period starting at the operational (Number 6) level and above. The use of detailed work measurement at the job, element and motion or therblig is not precluded but does not constitute part of the work measurement system explained in this study.	
8	Element (Part of Job)	None defined	None defined		
9	Therblig or Motion	None defined	None defined		

Source: Navy Management Engineer, Washington 25, D.C.

studies, such as organization and method studies, procedure surveys, and space layout surveys.

AN APPRAISAL OF THE WORK MEASUREMENT SYSTEMS

The remainder of this article presents an appraisal followed by an analysis of the potentialities of the work measurement system. Figure 2 shows the basic reasons for the development of work measurement. The top portion of Figure 2 defines the specific requirements for quantitative management of manpower. The systems have been developed to furnish factual answers to the following questions: Where are the military services performing what activities? How much work has been and is scheduled to be produced? How much manpower has been consumed or will be needed to accomplish specified workloads? How is manpower consumption evaluated? How are future manpower needs determined?

What techniques are used to increase the effectiveness of manpower and provide incentives for organizations, organizational segments, and groups of people.

The summary of the Navy's system, as illustrated in Figure 2, demonstrates how that system has been designed to give an answer to the questions listed above. Figure 2 illustrates how the work measurement data are generated from either one of three levels — namely, the operational, sub-functional, or functional level. The data are consolidated, analyzed, and used at several management levels. The work measurement systems described in this article have not been designed for use below the operational level; i.e. they have not been especially designed to cover either individual tasks, elements, or motions.

The Congress and the President of the United States have demanded sound programs and systems for manpower planning and control. Title X of Public Law 429, which was passed by the Eighty-first Congress in 1949, required that formal management improvement programs be established in each government department (if not already functioning) for the purpose of "systematic review of the operation of each of its activities, functions, or organizational units, on a continuous basis . . .". The objective of such reviews included: (1) determining the degree of "efficiency and economy" in the operation of the department's activities, functions, or organizational units; and (2) identifying the units that are outstanding in "efficiency and economy" of operations.

The work measurement systems of the military services have evolved as basic management tools which are used in satisfying the essential requirements for improved management. Figure 3 illustrates how the demands for improvement in manpower management have been translated into procedural requirements of the work measurement systems. Column one of Figure 3 gives the specific requirements of the work measurement systems. Column two shows how the work measurement systems have been designed to accomplish these requirements. Illustrations of the work measurement techniques required in each case are given in column three.

Using Figure 3 as a basis, the appraisal of the work measurement systems' abilities to accomplish the necessary purposes is given below:

1. Work measurement systems are designed to answer specifically the question of where the military services are performing what work. A work measurement system is not required for determining the broad areas where the military services are performing their missions. Functional organizational charts, tables of organization, and tables of distribution usually reflect these broad areas. However, to be able to identify the specific activity, function, sub-function, and operation, the organizational unit requires the use of a technique which will furnish not only overall, but also detailed data classified in a specific and predetermined manner. The work measurement systems in all the services have been designed to furnish these data.

2. Periodic reports of work accomplished in terms of quantitative work units have been prescribed for all work measurement functions, sub-functions, and operations which have been defined and selected as part of the system.

3. Specific responsibilities for developing and conducting the work measurement system have been assigned at each management level; however, there is a diversity of opinion concerning the organizational units which should be responsible for the development and operation of the work measurement systems.

4. Reporting the amount of time consumed to complete a reported workload is the very heart of a work measurement system. All work measurement systems have been designed to accomplish this requirement. Productive time, nonproductive time, and overtime are usually reported separately. This breakdown of time expended gives management desirable control over not only the normal

FIGURE 3

REQUIREMENTS AND ACCOMPLISHMENTS OF WORK MEASUREMENT SYSTEMS (ILLUSTRATED)

Management's Requirements: The Congress, President, Bureau of the Budget and military management at all levels need to know:	How work measurement fulfills these requirements	Illustrations
1. Where the military services are performing what missions.	Determines and defines work areas including work measurement functions, sub-functions, and operations.	Area: Shore Establishment Function: Public Works Sub-Function: Utilities Operation: Steam Generation
2. How much work is accomplished.	Expresses work accomplished in quantitative terms of work units completed.	Supply: Tons Handled Fiscal: People Serviced
3. Who is responsible for manpower planning and control and work measurement system.	Assigns definite responsibility at each management level within the three Armed Services.	Secretary Level Bureau Level Activity Level
4. How much time was required to perform how much work.	Establishes a system for reporting workload and manpower data.	Man-Months Used -- 462 Tons Handled -- 18,000
5. How many people will be required to perform how much work.	Establishment of Standard Rates. Forecasts work requirements. Computes requirements.	.025 man years per ton handled 400,000 tons .025 x 400,000 = 10,000 productive man years (must also consider all allowable variances)
6. How much money will be required.	Use work measurement with accounting and budget data to compute money requirements on, e.g., 10,000 productive man-years plus 1,000 non-productive man-years.	Average salary -- $3,400 11,000 x 3,400 = $37,400,000 salary requirements
7. How the military services review and evaluate their performance in terms of man-power utilization.	Use of the Utilization Index.	Standard rate = .025 man-months per ton Workload completed 18,000 tons Standard man-months .025 x 18,000 = 450 Man-months used --- 462 Utilization Index = $\frac{450}{462}$ = 97%
8. What techniques are used for improving efficiency and increasing quality of performance.	Encouragesthe proper use of appropriate techniques; however, does not directly include such provisions.	Encourages: work simplification, cost accounting, quality control, job analysis, use of improved machinery and equipment, suggestion systems, and better methods.
9. What techniques are used for providing incentive for organizations and organizational segments to improved manpower utilization.	Comparisons of rates, utilization indexes and offering suggested remedial measures, particularly mandatory manpower reductions when operating below standard.	Supply Function: Activity Utilization Index A 97% B 80% C 110% Activities A and B should be scrutinized for possible mandatory personnel reduction.

time and overtime spent on the job but also the nonproductive time.

5. After the establishment of standard rates, the amount of time which is needed for performing a given or forecast workload is a matter of arithmetical computations. The work measurement system of the Navy provides for service-wide standard rates, procedures for forecasting workloads, and the techniques for calculating future manpower requirements. The Army and Air Force, although not as advanced in the area as the Navy in some respects, provide for

individual activity standard rates which are used at the activity (local) level.

6. Work measurement data are being integrated more and more with accounting and budgeting data in determining the amount of money which was spent (accounting) or the amount of money to be spent (budgeting) for manpower. The integration of these three systems — namely, personnel cost accounting, budgeting, and work measurement — has never been fully realized by any of the armed services. However, all the work measurement systems are being designed to provide for this integration. Standard work areas, functions, sub-functions, and operations have been selected and code numbers provided for the cross referencing among cost accounting, budgeting, and work measurement.

7. The utilization index is the one work measurement technique that provides either for individual or overall evaluation of performance in terms of manpower utilization. The work measurement systems are flexible to the extent that they provide for necessary and reasonable variances for differences among individual activities without penalizing the activity for not being able to maintain service-wide standard rates.

8. Work measurement systems include techniques which have been designed for use in improving manpower utilization and increasing the quality of performance. They also emphasize and encourage the use of other management tools for improving productivity. For example, the work measurement systems support and urge the use of work simplification, time and motion study, cost accounting, quality control, production planning and control techniques, job analyses, and the use of improved methods and equipment wherever these management tools can be used successfully. A closer coordination between work measurement and each of the related management tools for improving manpower utilization is considered desirable. The collection, evaluation, and use of work measurement data, per se, do not produce the desired results. The work measurement systems are no panacea or "cure-all." The work measurement systems focus attention on problems which otherwise would never come to management's attention and point out needs which otherwise would have never been known.

Thus, work measurement, rather than being a panacea, becomes a type of an alarm system for signaling both favorable and unfavorable conditions which prevail. The integration of all management techniques which relate to or supplement each other is a major task and a distant objective to be achieved. The failure to provide adequately for this integration during the development period is one of the most favorable factors in all of the work measurement systems; however, the three services have recognized this need and are expending more effort in providing for this integration.

9. The follow-up actions which furnish management at each level with the tools necessary for creating an incentive for better manpower utilization involve comparing production rates, performance rates, utilization indexes, offering suggested remedial measures, and making reductions in personnel mandatory when operating below standard rates unless such overstaffing can be justified. These follow-up measures have been utilized on a limited basis. It is expected, however, as the work measurement system becomes more fully developed and implemented that the necessary follow-up actions will be taken.

THE POTENTIALITIES OF THE WORK MEASUREMENT SYSTEMS

The work measurement programs of the military services are in the experimental and developmental stage. These programs have been developed in response to recognized needs for improved management of military manpower. The needs are associated with fundamental problems of planning, allocating, controlling, and utilizing manpower. These management problems are especially important during the period when the

United States has to maintain a large defense establishment.

Authoritative sources have charged the military services with gross wastes in the use of manpower. Furthermore, this waste is normally highest during the period when the nation needs manpower most. These manpower wastes had prevailed for several years in spite of the fact that each Service had employed some "broad-gauged" types of measurements, such as percentages and ratios, which were used as overall "yardsticks" for allocating and controlling manpower. Carefully designed techniques which could be applied for managing manpower at all organizational levels were needed.

Many traditionalists in the military organizations have not encouraged the use of such management devices as cost accounting, work measurement, and performance budgeting. However, during and since World War II the military management has become more receptive to the use of these and other techniques for improving management. Methods of warfare have changed significantly in the last few decades. A large percentage of the personnel in the military services is used for noncombat type operations — e.g., maintenance, utilities and public works, repair work, supply operations, accounting, post exchanges, and other industrial and commercial work. Furthermore, many jobs in these areas are held by civilians. Therefore, whether this country is at war or peace, the President, the Congress, and the citizens of the United States should expect and demand the use of sound principles and techniques to assure the effective use of the country's manpower and other resources.

Urwick stressed the importance of this problem when he stated:

> "Almost up to the beginning of this century (20th) the central problem in the view of both administrators and the public was the prevention of positive corruption; deliberate peculation in some of its numerous forms. The exceptionally high standard in this respect . . . has, to a great degree, relegated the question of direct financial fraud to a secondary place. The major issue of our time is rather to provide the administrator and the public with figures which really reflect the results of policy and which provide a sound basis alike for an assessment of past performance and the determination of future action."[9]

The use of work measurement systems is making it possible to meet this basic challenge which, when translated into terms of manpower management, demands that planning and control be based upon the analysis and interpretation of valid and accurate data. The present-day requirements for managing manpower demand the use of facts. Work measurement not only presents the facts in terms of statistical data, but also provides possible bases for the evaluation of past performance and for determining future requirements.

Work Measurement Reflects Changes in Mental Attitude and a Broadening of Scope

The lack of motivation for economy and efficiency in governmental organizations has been one of the major obstacles to the use of scientific management techniques such as work measurement. Harlow S. Persons sensed this lack of motivation to be almost the same thing as the government's lack of the profit motive, the basic incentive found in private industry.

David E. Lilienthal warned that the failure to use fundamental management principles in public affairs placed the public administrator in the position of running the risks of "grave consequences." The differences between the administrative requirements of the Military Services and private industry have probably been overemphasized in the past. Although methods differ, prominent authorities do not recognize any fundamental differences in the principles of administration between public and private organizations. For example, Fayol said that both public and private undertakings require planning, organiza-

[9] L. Urwick, **The Elements of Administration**, Sir I. Pitman and Sons, London, 1944, pp. 99-100.

tion, command, coordination, and control. Furthermore Fayol pointed out that to be successful, both types of undertakings must observe the same principles.[10]

The adoption and use of work measurement systems in the military services reflect significant changes in philosophy and mental attitude which permit the application of sound management principles by using a factual basis in managing manpower. The work measurement systems may provide to some degree for that "substitute" which is needed in government to compensate for the lack of profit motive. Competitive interests can be generated among individuals and especially among organizations by establishing production and performance goals, comparing and evaluating performances and the use of both financial and non-financial incentives.

The use of work measurement for managing manpower may reflect a significant change in the practical philosophy of government. The basic philosophy of "that government is best which governs least" could be changing to a more positive philosophy of "that government is best which serves most." For example, in the past with respect to planning and budgeting for manpower, the thinking process was one of determining, first, how much money. Then the number of personnel was based on the amount of money allocated. However, without the use of work measurement, there was no way of determining the amount of work which could be accomplished with the allocated funds. The work measurement systems, however, not only furnish a justification for the funds requested for the manpower budget, but also provide factual evidence of how those funds are being employed in terms of manpower used and amount of work accomplished.

Inherent Limitations of the Systems

This series of articles has concentrated attention upon the procedural requirements and possible benefits to be derived by the Armed Forces when using work measurement. Nevertheless, it is necessary to recognize the basic limitations which are inherent in a work measurement system.

It should be recognized that a performance record is not a true measure of real "efficiency" of manpower. As has been pointed out previously, increases or decreases in productivity may or may not be partly or solely due to the increased or decreased efforts or "efficiency" of the personnel involved. Such things as the use of machinery, quality requirements, organizational differences, patterns of personnel assignment and types of labor markets affect performance.

Work measurement systems do not measure the adequacy of the services rendered or the necessity of the work being performed. It is one problem to determine whether the work which is being performed is necessary or, if it is necessary, whether it is being performed adequately. It is quite another problem to measure how much work is being performed in terms of work units produced within a reported amount of time. The work measurement system furnishes the answer to the latter question. However, it will not necessarily show the quality, adequacy, or necessity for the work being performed. This is the reason why work measurement should be combined with other management tools such as budgeting, organizational and functional analyses, work simplification and quality control, all of which help to provide answers pertaining to the requirements, adequacy, and quality of the work being performed.

Work measurement should not be used blindly as the only driving force to achieve economy in operations. First, it must be recognized that output per man-hour (time) may be increased in several ways other than increasing the effectiveness of labor. Therefore, it could be that labor requirements per unit may be decreasing at the same time that total costs per unit are increasing. This is

[10]Henri Fayol, **General and Industrial Management**, Sir I. Pitman and Sons, London, 1949, p. xv.

one reason why cost accounting should be used along with work measurement wherever feasible.

Since one of the purposes of a work measurement system is to obtain a tool for quantitative evaluation of group performance, the systems' techniques have been developed for this purpose, and cannot normally be used for evaluating the performance of individuals. This is the reason why time and motion study, where applicable, and the work measurement systems, as described in this study, may be used to complement each other.

Work measurement has not and will not eliminate the need for good management at every organizational level. The work measurement systems probably emphasize this need. For example, a work measurement program can be used to emphasize the value of integrated organizational and job analysis systems and in the selection, training, and assignment of personnel.

CONCLUDING OBSERVATIONS

Although the procedural requirements of the work measurement systems have been determined and promulgated in large segments of the military services, the application of work measurement is largely in an experimental phase. As further progress is made in the development and use of the systems, new and greater areas in administrative policies in respect to management should be opened for exploration and use. For example, work measurement furnishes a tool for conducting research studies pertaining to management problems throughout the Department of Defense. As the programs develop, the requirements of specific job and organizational units should be studied in more detail. Tests are needed to determine the validity of manning tables and staffing guides for tables of organization, and to appraise the effects which technological changes have on work methods and performance standards. Studies pertaining to the use of "limited duty" personnel, of personnel in uniform being replaced by civilians, and of men by women are related to the entire problem of manpower management and need to be coordinated with the results of work measurement programs.

Future studies are needed to compare performance records among the military services and also with records of similar work in other government agencies and perhaps in private industry. In the future, work measurement should furnish the basis for conducting studies pertaining to better utilization of manpower and machinery or equipment. The programs could become a primary instrument for research in training methods and in the use of incentives and awards. Such studies, which have been limited in the military services because of inadequate performance records, could generate facts of significant impact in making managerial decisions.

The work measurement systems, when used with other management devices, should be the basis of management improvement reports which the military services could use in many ways. For example, information from these reports could be selected for release to the President, the Congress, and the public. Such a report would mark the beginning of an effort for providing the executive and legislative branches of the government as well as the citizens with knowledge pertaining to the utilization of the manpower consumed by this nation's military services.

The work measurement systems of the Armed Forces should place emphasis on overall management improvement, not merely on measuring the performance of groups of persons when performing certain types of work. To make the most effective use of work measurement programs as a management device, military management should not only extend them to include all applicable work areas, but also to place emphasis on the performance of whole organizations.

The Factor: His History and Functions

by BERT P. CHAGNON*

This article describes the history of the development of the Factor and presents some detail concerning current operations.

FACTORING is a little understood term when used in the technical business sense. Moreover, when one speaks of a factor a clear and meaningful picture is not conveyed to the average person. Few outside the textile industry have more than a hazy concept of the factor, and frequently they confuse his functions with those performed by other financing agencies. For example, the factor is often mistaken for a commercial finance company, a separate kind of financial institution also engaged in financing accounts receivable but on a somewhat different basis.

This article endeavors accurately and objectively to describe the factor and his functions with a view to providing the answers to such questions as: "Who is the factor? What does he do? What does he charge?" Each will be treated in sufficient detail to provide a conceptual basis for understanding the subject. However, no attempt will be made to introduce any detail concerning the mechanics of factoring.

THE FACTOR DEFINED

The factor is a specialized banker. To a degree his function is similar to that of the commercial banker in that both make loans and assume risks. Unlike the commercial banker, however, the factor does not deal in time or demand deposits nor does he provide general banking and borrowing facilities. Whereas the commercial banker endeavors to serve business in general, the factor's sphere of operations is more limited in that he serves primarily, but not exclusively, the textile industry and related lines.

It is the factor's function to purchase accounts receivable outright, on a notification basis, without recourse for credit loss. As such, the factor purchases accounts receivable from such clients as textile mills, converters, clothing manufacturers and the like, and assumes the full credit and collection responsibility on these accounts after notifying the debtor named in the invoice that payment is to be made to him as the new owner. An account receivable, inasmuch as it represents a claim, is saleable and transferable from one party to another in the same way as any other contract. The actual sale and transfer of the accounts is accomplished by assignment, the seller assigning his rights in the account to the factor for a consideration.

FUNCTIONS OF THE FACTOR

The words **outright purchase of accounts, on a notification basis, without recourse for credit loss** clearly identify the factor's role and distinguish him from any of his counterparts in finance. Commercial finance companies, which are also engaged in accounts receivable financing, operate on a different basis. Unlike the factor, commercial finance companies engage primarily in "non-notification" financing, which activity involves the assignment of accounts receivable as collateral security for a loan without notice being given to the debtor named in the invoice and without assumption of the credit risk present in the accounts pledged as collateral.[1] Thus, while both the factor and the commercial finance company are engaged in financing receivables, the factor, as owner of the account, bears the full risk of loss there-

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[1] W. S. Seidman, **Finance Companies and Factors,** National Conference of Commercial Receivable Companies, Inc., New York, 1949, p. 13.

on in contrast to the commercial finance company which, as a secured creditor, is able to shift any default on the pledged accounts back to the seller. This is an important difference.

The factor's functions begin but do not end with the purchase of receivables. Were the factor to purchase accounts indiscriminately, he would soon possess many uncollectible accounts. Therefore, to protect himself and to permit proper selection of risks, the factor first carefully investigates the credit standing of the would-be customers of his client and approves and accepts the sales and resulting invoices only from those who appear to be worthy of credit. Investigating the credit standing of the manufacturer's customers and advising him when to ship or not ship on credit is a valuable service which the factor renders in conjunction with purchasing receivables.

Closely allied to the purchase of receivables is a second principal service performed by the factor which is to cash or discount receivables prior to their maturity date. Purchasing receivables and checking the credit standing of the debtors named in the invoices is one function; advancing funds on accounts not yet matured is another. The factoring relationship can, and sometimes does, end when the account is sold to the factor. In this event, the seller does not receive his money until the account actually matures and the debtor named in the invoice remits payment — to the factor in this case — under the terms of merchandise sale. Many concerns — including many large ones — limit their factoring relationship to simply selling their accounts to the factor, thereby shifting to him the chore of maintaining a credit and collection department. Other concerns in greater need of funds and unable to wait the 30, 60, or 90 days called for under the terms of the invoice, discount their accounts when they are sold to the factor. In this manner, the seller gains immediate access to funds. For this service the factor makes a separate charge on the basis that he is providing the client with liquid working capital which otherwise would remain tied up in accounts receivable until their maturity.

The factor, in addition to providing the primary and unique services described above, offers his clients secured and unsecured loans, financial and marketing advice, and occasionally such house and miscellaneous services as billing facilities, display space, and drop shipment arrangements. These secondary accommodations are usually provided in conjunction with, but are incidental to, the regular factoring relationship which centers around the purchase and discount of receivables. Most of these secondary services while properly identified with the factor are not necessarily peculiar or exclusive to him. For example, making secured and unsecured loans is not a service which only a factor can render but one which also can be performed by a number of other agencies.

OPERATIONS OF THE FACTOR

The factoring relationship is carried on under a contractual arrangement known as a **factoring agreement.** This is a legal document which spells out the rights and responsibilities of both parties, each to the other. Some agreements are drawn up for a stated period of time. Some do not define the duration of the contract other than to provide for its termination under certain stated conditions or upon 60 or 90 days' notice by either party. Whatever the form and content of the agreement, it usually contemplates a continuing relationship as evidenced by the fact that the typical agreement remains in force for some fourteen to eighteen months.

Once the factoring relationship is established, the factor serves his client in the capacity of banker. That is, as soon as the client makes a sale to an approved account, the factor stands ready to purchase the resulting invoice and to assume the credit risk and collection

responsibility thereon. If, in addition to selling the account, the manufacturer discounts it before maturity, he is able to do the equivalent of a cash business. In that event, the factoring arrangement provides the client with a steady stream of funds limited only by the amount of sales made. Factoring, to the extent that it provides a concern with a flow of working capital decreases that concern's needs for permanent equity capital with which to carry on operations. This argument is usually well emphasized in factoring literature.

In the final analysis, the units dealt with under the factoring agreement are individual invoices. The length of the factor's loans to individual clients on individual invoices is determined by a number of considerations, chief among which are the client's needs for funds and the length of the terms he extends to his own customers. Credit extended by factors is essentially for a short term with the bulk of the loans usually not extending beyond 180 days. While the factor is under no obligation to maintain the liquidity expected of a commercial bank, nevertheless because he himself obtains his funds on a short-term basis, he cannot very well afford to loan funds for long periods of time.[2]

SOME HISTORICAL OBSERVATIONS

While of ancient lineage historically, the factor did not emerge in his present form until late in the 19th Century. Prior to that time, he had been known by other names and had performed a broader function. The factor's immediate prototype, the commission merchant, developed in America prior to the Civil War. Earlier forerunners, in the persons of the English Overseas Agent and the Blackwell Hall Factor can be traced to 16th and 17th century England, and earlier.[3]

A common thread unites the factor of today with the factor of yesteryear but at times this thread is thin because during the various periods of history, the factor performed diverse functions, some better identified with selling than with financing. For example, during the English Colonial period the factor, then known as an Overseas Agent, sold English goods in the American colonies for an English principal for which he was paid a commission. Assuming risks on receivables and advancing funds to carry on production were not then a part of his functions. From the Civil War to the last quarter of the 19th century, the factor, then called a commission merchant, was both a selling agent and a supplier of funds. His role was to sell the output of domestic textile mills on a commission basis, to make advances on goods consigned to him prior to their resale, and to extend credit to customers and guarantee the collectability of their accounts with his principal. It was not until after 1875 that the factor, involuntarily shorn of his selling function because of the changing pattern of distribution, began to assume the function now performed and to be known by his present name.[4] Prior to this, despite claims to the contrary, the factor was a furnisher of funds and a carrier of risks only as an adjunct to his primary role, that of a selling agent.

From the 1870's, when the factor gave up his selling role to concentrate primarily on financing, to the 1920's, the factor received little public attention. The advent of the younger and more virile commercial finance companies into factoring began in 1928 when the Commercial Investment Trust, better known as CIT, began to purchase previously independent factoring houses and to establish them as subsidiaries. In 1933, the Commercial Credit Company also entered this field by purchasing an independent house which became the nucleus of its present factoring organization. The period 1928-1935, sometimes referred to as the "consolidation period"

[2]F. Becker, **Present Day Banking**, American Bankers Association, New York, 1952, p. 62-63.

[3]W. H. Hillyer, "Four Centuries of Factoring," **Quarterly Journal of Economics**, February, 1939, p. 305-307.

[4]W. H. Hillyer, **James Talcott, Merchant**, Charles Scribner's Sons, New York, 1937, p. 8.

for the reason described, marks the beginning of the modern era in factoring. Articles appearing in the financial publications of that period speak of the "rebirth" of the factor and the reinvigoration of the function in the hands of the commercial finance companies.[5]

Today the total volume of receivables and loans handled by factors, is in excess of $3.5 billion a year. About 40 percent to 45 percent of this total is in the hands of four large factoring houses. Three of these, all controlled by CIT, account for approximately 33 percent of the total volume. Another 10 percent to 12 percent of the industry total is handled by a subsidiary of Commercial Credit Company.[6] The remainder is distributed among several hundred factors of which only a dozen or so are important. Many of these are also engaged in non-notification and other types of financing in addition to factoring as treated in this article.

DEVELOPMENTS DURING THE 1930's

Prior to the depression of the 'thirties, the factor was virtually unknown outside the textile industry. When the depression caused a shrinkage of volume in textiles and eliminated many old names from that field, the factor started to look beyond textiles for volume. Since the great depression, some diversification has taken place. At present, in addition to textiles and related lines, the factor is serving, to a greater or lesser extent, such industries as shoes, hardware, building supplies, plastics, metal products, etc.[7] However, all of these industries combined do not as yet account for more than 10 percent of the factor's total volume.

In reaching beyond textiles for additional volume and diversification, a number of problems beset the factor. One of the limitations was the lack of experience or knowledge concerning other fields. The factor's experience had been primarily in textiles and his knowledge was largely limited to that industry. Thus, acquisition of insight and know-how to operate efficiently and profitably in other lines became the first need.

Another limiting condition to spreading the factor's operation was the fact that while those producers and distributors engaged in textiles and allied industries were already familiar with the factoring function, others in many cases were not. In fact, the little that was known or might have been heard was likely to have been prejudicial to the factor. For example, when the notice "this account is owned by and payable only to ABC Factors" appeared on an invoice, it was frequently misunderstood both by the client's customers and by his suppliers.

Another consideration was that many buyers did not care for the third party relationship forced upon them when the factor purchased the account. This has given rise to the practice of some concerns of specifying in their purchase orders that the account resulting from the transaction could not be subject to sale or assignment.

ELEMENTS IN COMPETITIVE EXPANSION

It may be noted that in going beyond the traditional sphere of his operations the factor is faced with competition. Other financing agencies are also interested in securing volume and are willing to make concessions and to fit their services to the needs of interested business men who would otherwise make good prospects for the factor. While banks and commercial finance companies are primarily interested in lending against receivables rather than purchasing them outright, there are several areas where competition is possible.

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[5]Owen T. Jones, "Factoring", **Harvard Business Review**, Winter, 1936.

[6]F. Becker, **Factors, Their Development, Practices and Financing by Banks**, Graduate School of Banking, Rutgers University, New Brunswick, p. 60.

[7]CIT Financial Corporation, **Annual Report, 1953**, p. 10, and Commercial Credit Company, **43d Annual Report**, December 31, 1954.

One example of this is loans, both secured and unsecured.

A further consideration which impedes the factor in his quest for diversification and additional volume is the relatively high cost of factoring which makes it difficult to serve certain clients, especially those unable to muster a minimum of $250,000 in factorable sales per year.

The ability to borrow funds cheaply at the wholesale rate and in turn to relend those funds piecemeal at the retail rate, coupled with keen credit judgment and a vigorous management, account in large part for the factor's profitable operations. For every dollar's worth of funds which the factor has invested in his own business, he is able to borrow from two to four times that amount from banks or in the commercial paper market.[8] The larger factors enjoy excellent credit standing and experience no difficulty in obtaining all of the funds they require at or below the prime rate of interest.

Costs of Factoring

Commissions for purchasing receivables account for 60 percent to 70 percent of the gross income of the factor. Interest charges for loans provide the remaining 30 percent to 40 percent.[9] Factoring is not an inexpensive service. For the functions he renders, the factor makes the following charges: (1) for purchasing accounts and assuming the credit and collection risk thereon, the rate is from 0.5 percent of face for the best paper to upwards of 2.0 percent for less desirable paper; (2) for discounting paper prior to maturity and making funds available to clients, the rate is a straight 6.0 percent interest charge per year. It should be observed that the charge for purchasing accounts, ranging from 0.5 percent to upwards of 2.0 percent, is not a rate of interest but represents an individual charge levied upon each and every invoice. Thus, a manufacturer shipping to his customers on 30-day terms and selling the account to a factor, would pay the basic commission charge each time a sale was made.

The factor undergoes expense in checking credits, handling collections, providing for bad debts and the like; but even after these expenses have been covered, there remains an attractive profit element. While profit and loss statistics are difficult to obtain, competent observers agree that an efficient factor is able to realize a net profit of from 7.0 percent to 15.0 percent on the funds which he himself has invested in the business.[10] Many factors would feel that their operation left something to be desired if it did not provide a 10.0 percent to 12.0 percent net yield on net worth.

While the charge made for purchasing accounts includes a profit element for the factor, in many cases costs of handling the business plus whatever more can be safely assessed, the second type of charge made by the factor for discounting receivables prior to the maturity date is predicated, in part at least, on challengeable assumptions. The point is not in the 6.0 percent charge itself, but in the calculations and deductions made before arriving at the base to which this charge is applied. For example, in the case of a $1,000 invoice bearing terms of 2.0 percent, 10 days, net 30 days, the factor in discounting the invoice automatically deducts the 2.0 percent customer discount feature irrespective of whether the customer actually takes it or misses it. Then to the basic net 30-day terms stated in the invoice, the factor adds an extra 10 days to cover mailing time, delays in receiving payment, time for clearance of checks, etc. The result is that the factor imposes the 6.0 percent interest charge on an artificially long period. In processing the above $1,000 invoice for payment, the

[8] F. Becker, **Factors, Their Development, Practices and Financing by Banks,** Graduate School of Banking, Rutgers University, New Brunswick, p. 62-63.

[9] **Ibid.,** p. 62-63.

[10] From a statement made by the President of the Business Finance Corporation, Philadelphia, Pa., to the author, June 1955.

factor's computations and deductions would be as follows:

$1,000 invoice		
Terms: 2%, 10 days, net 30 days.		
Face Value: $1,000.00		
Factor's charges:		
1.0% of face for purchasing the account and assuming the credit and collection risk thereon	$10.00	
6.0% interest charge for discounting the invoice prior to maturity. (6.0% on $1,000 for 40 days)	6.67	
2.0% discount available to customer if customer pays within the discount period	20.00	
		36.67
Discount value of the $1,000 invoice		$963.33

The discount value of the above invoice assumes that the factor would be willing to advance the client 100 percent of the proceeds. While this is sometimes true, in many cases the factor will advance only 90 percent of the proceeds, keeping a 10 percent balance as a cushion for merchandise returns and allowances, disputes, adjustments, etc. Assuming, however, that in the illustration provided, the factor did make a 100 percent advance and did provide the client with $963.33 in ready cash, the factor's total income from this particular transaction would still amount to $36.67, a return of 3.7 percent for carrying and servicing a credit worth $1,000 for 30 days. On the other hand, assuming that the customer would take his $20 discount, in which event it would be lost to the factor, the risk would be carried for only 10 days (the discount period stated in the invoice) for which he would be receiving a commission charge of $10. The point of this detail is simply that factoring can be expensive to the user and more often than not is.

TYPES OF CUSTOMERS

Factoring involves the mass financing of individual invoices. The face of each invoice will vary with the type of good sold by the factor's client — that is whether style or staple goods — and with the buying habits of customers, and will range from a few dollars to several thousand. The volume supplied by individual clients ranges from $0.25 million to as much as $20 to $25 million in the case of the biggest mill clients, with the bulk of the accounts fluctuating from near $1.0 to $5.0 million. Because the factor's operation is predicated on volume, ordinarily he is not interested in any client unable to produce a minimum of $250,000 in factorable sales per year.

There are several tests which determine whether or not a concern is of interest to a factor:

First is the type of customer to whom a concern sells. Since the factor assumes all credit losses, the client's sales must be made only to customers on whom credit information is available. Obviously, manufacturing concerns which sell to customers so small that no credit information is available on them are not suitable for factoring. Also, if a manufacturer sells directly to the consumer or through dealer distributors on the installment plan, this type of financing cannot properly be handled by the factor. In such cases, the manufacturer would have to deal with finance companies organized to finance this type of sale.

Second, the type of good which the manufacturer produces and markets is also important. Factors look at the marketability of the goods represented in the accounts receivable they purchase and ordinarily do not like to stray too far from staple lines. Experience has shown that categories such as highly styled goods do not represent good prospects for the factor because of the heavy returns, allowances, adjustments, and the high mortality of concerns in these fields. Trades having a narrow gross profit margin are likewise not suitable because of the cost of the factoring service.

Contrary to the opinion expressed by those who lack intimate knowledge of the business, the financial responsibility of concerns that factor is reasonably substantial. A fair portion of the factor's clients have sufficient working capital to finance themselves and seek from the factor only credit protection and freedom from bookkeeping and collection problems. As a rule, the factor's client is admittedly in a better financial condition than the average client of a commercial finance company, which is primarily seeking financial help, sometimes in desperation, and at a rate of interest considerably higher than the cost of factoring.[11]

LEGAL CONSIDERATIONS

Factors, inasmuch as they deal extensively in assignments, loans, factor's liens, collections, insolvencies, and the like, are vitally concerned with the law. When the law has proven prejudicial to their interests, as it did in New York State prior to 1911, they were successful in getting the law amended to recognize their interests. Since the factoring industry is centered in New York, the laws of that State are paramount on the subject of factoring.

Usury laws do not apply to the factor inasmuch as he does not lend on receivables, but rather purchases them outright without recourse.[12] Likewise, since he does not deal in time or demand deposits, he is free from regulation by the State Banking Commission, the Federal Deposit Insurance Corporation, and the Comptroller of the Currency. This gives the factor a slight advantage over commercial banks, permits more profitable employment of funds, and relieves the factor of the burden of reports and audits.

[11]W. S. Seidman, **Finance Companies and Factors,** National Conference of Commercial Receivable Companies, Inc., New York, 1949, p. 22.

[12]**Ibid.,** p. 19-24.

CONCLUDING OBSERVATION

Until now, factors have considered banks more as a source of funds than as a source of competition. In some areas, this concept is beginning to change. During the post-war period, a few banks have been attracted by the possibilities of factoring. For example, the First National Bank of Boston established a factoring division shortly after World War II. During the eight years that it has been engaged in this operation it reports having increased its initial volume tenfold.[13] Another bank in the Atlanta area is also engaged in large scale factoring. The entry of banks into factoring has, as yet, been limited to a few, and the total factoring volume done by those so engaged is a small percentage of the industry total. Nevertheless, it is a trend which could assume larger proportions.

Should commercial banks choose to enter the field of factoring **en masse,** as they did with consumer credit, they would possess certain advantages not available to commercial factors. Banks, by virtue of their position in the community and their ability to mobilize funds at minimum rates of interest, could offer lower factoring rates, and presumably would be able to attract many of the commercial factor's present clients in addition to that large group of business houses not presently being served by factors because of the inability of those houses to produce a volume of sales sufficiently large to attract the factor. It is too early as yet to predict the effect on commercial factoring from the entry of banks in that field, but the developments are certain to be of significance.

[13]**The First Bank Factoring Plan,** First National Bank of Boston, Boston, 1952, p. 5.

The Debt Structure and the Financial Flow of Funds in the United States

by NATHANIEL JACKENDOFF*

This article describes the current debt structure of the United States. It also brings together a summary of some of the recently developed statistical information on this subject.

THE subject of debt has been the focal point of public interest in a variety of contexts, but special attention has usually been accorded to growth of federal debt and of consumer debt. Too frequently, discussions of this subject have tended to lose perspective for lack of an overall view of the debt structure of the United States. This article will be confined, primarily, to bringing together the available data provided by the United States Department of Commerce and some more recent data developed by the Board of Governors of the Federal Reserve System. It will not attempt to answer the question of whether any particular form of debt is excessive or whether the growth of total debt has been too rapid.

The first of the succeeding sections will summarize trends in the outstanding debt structure of the country between 1916 and 1954, both as to totals and distribution. The second section will discuss the net changes in the financial liabilities of the nonfinancial sectors of the economy in selected years between 1939 and 1953. The final section will summarize and appraise the significance of these statistics.

TRENDS IN THE DEBT STRUCTURE, 1916-1954

The concept of net debt. The United States Department of Commerce has developed debt statistics for the country utilizing two debt concepts, gross debt and net debt. The most complete statistics are available in the net form. The following discussion will, therefore, if only for expediency, utilize the net figures. Some explanation, however, is in order for the purpose of clarifying the difference between the gross and net statistics. Gross debt includes all debt owed by the various sectors of the economy both to other sectors and within itself. For example, the gross debt of the Federal Government at the conclusion of 1954 was $294.4 billion, whereas, the net debt was $230.2 billion. The difference of $64.2 billion was accounted for by almost $50 billion of Federal Government securities held by federal agencies and trust funds, $14.5 billion of federal agency securities held by the United States Treasury, and $27 million of federal agency securities held by other federal agencies. The difference may be looked upon, therefore, as duplicating debt, reasonably disregarded in assessing the debt of the Federal Government. A similar procedure has been adopted by the Department of Commerce in connection with state and local debts and corporate debt.

The growth of net debt in the United States, 1916-1954. There was a more than sevenfold increase in the combined net public and private debt between 1916 and 1954 from $82 billion to $605 billion. There were four distinct periods of growth: (1) during World War I, (2) during the decade of the 1920's, (3) during World War II, and (4) during the post-World War II period. The decade of the 1930's, associated with the Great Depression, showed a decline of the total debt into 1933, and an increase thereafter to 1940, these two shifts being approximately equal. (See Table 1).

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TABLE I

Percentage Change of Net Debt (Public and Private Combined) in the United States, Selected Periods, 1916-1954

Years	Percent
1916-1920	+ 83
1920-1930	+ 41
1930-1933	— 11
1933-1940	+ 11
1940-1945	+114
1945-1954	+ 49

Source: Computed from debt statistics published by the United States Department of Commerce, **Survey of Current Business**, September, 1953, p. 14, and May, 1955, p. 9.

Public versus private debt, 1916-1954. Apart from the tremendous growth in the total debt during these years, the most notable change was the shift in the composition of the debt. The most important of these shifts was the tremendous growth in relative importance of public debt. This is related to the occurrence of two world wars and a major depression during the four decades. Prosperous peacetime years in the decade following each of the two wars reversed the trend, but failed to recover the ground lost by the private sector of the economy. During the contraction that occurred in the depression years of the 1930's, public debt expanded rapidly to compensate partially for the decline in private debt. (See Table 2.)

Federal Government versus state and local government debts, 1916-1954. There has been a complete reversal of the relative importance of the Federal Government debt as against that of state and local governments since before World War I. In 1916, the net federal debt accounted for only about 21 percent of the public debt, whereas it accounted for almost 90 percent of the total in 1954. State and local debt appears to have shown a relative trend somewhat like that of the private sector. (See Table 3.)

During the war and depression years it tended to decline relative to the federal debt, and in the postwar decades it tended to recover some of its lost position.

The distribution of private debt, 1916-1954. Corporate debt has consistently exceeded 50 per cent of net private debt since 1916. It briefly exceeded 60 percent during two periods: (1) during the depression of the 1930's, as other private debt contracted more rapidly;[1] (2) during World War II, as noncorporate debt failed to keep pace with the approximately 13 percent rise in corporate debt.

Farm debt declined from about 10 percent to 5 percent of net private debt between 1916 and 1954, reflecting at least partially the decline of the relative im-

[1]The major reason for the lagging decline of corporate debt was the protracted receivership of railway corporations.

TABLE 2

NET PUBLIC AND PRIVATE DEBT OUTSTANDING
SELECTED YEARS, 1916-1954 - DOLLARS AND PERCENTAGE DISTRIBUTION

End of Year	Total ($ Billion)	$ Billion		Percent of Total	
		Public	Private	Public	Private
1916	82.1	5.6	76.5	6.8	93.2
1920	135.4	29.6	105.8	21.8	78.2
1930	191.0	30.6	160.4	16.0	84.0
1940	189.9	61.3	128.6	32.4	67.6
1945	406.3	266.4	139.9	65.5	34.5
1954	605.5	263.6	341.9	43.5	56.5

Source: Ibid.

TABLE 3

DISTRIBUTION OF NET PUBLIC DEBT BETWEEN
THE FEDERAL GOVERNMENT AND STATE AND LOCAL GOVERNMENTS
SELECTED YEARS, 1916-1954 -- DOLLARS AND PERCENTAGE DISTRIBUTION

Year	Total Public Debt ($ Billions)	$ Billion		Percent of Total	
		Federal	State and Local	Federal	State and Local
1916	5.6	1.2	4.4	21.4	78.6
1920	29.6	23.7	5.9	80.1	19.9
1930	30.6	16.5	14.1	54.0	46.0
1940	61.3	44.8	16.5	73.0	27.0
1945	266.4	252.7	13.7	95.0	5.0
1954	263.6	230.2	33.4	87.3	12.7

Source: Ibid.

TABLE 4

DISTRIBUTION OF NET PRIVATE DEBT OUTSTANDING
SELECTED YEARS, 1916-1954
DOLLARS AND PERCENTAGEWISE

End of Year	Private Debt	Billion Dollars			Percent of Total		
		Corporate Debt	Farm Debt	Nonfarm Noncorporate	Corporate Debt	Farm Debt	Nonfarm Noncorporate
1916	76.5	40.2	7.8	28.5	52.5	10.2	37.3
1920	105.8	57.7	14.1	34.0	54.5	13.3	32.2
1930	160.4	89.3	11.8	59.4	55.6	7.4	37.0
1935	124.2	74.8	8.9	40.4	60.2	7.2	32.6
1940	128.6	75.6	9.1	43.9	58.8	7.1	34.1
1945	139.9	85.3	7.3	47.4	61.0	5.2	33.8
1954	341.9	176.6	17.6	147.7	51.7	5.1	43.2

Source: Ibid.

portance of agriculture in the United States economy. Opposite trends were evident during the two world wars: during World War I, farm debt rose rapidly, whereas, during World War II the farmers were able to liquidate debt. The peacetime record of agriculture has, on the whole, been unfortunate. The 1920's were years of farm depression, in contrast to the experience of the nonfarm sector, and when followed by the general depression of the 1930's, resulted in substantial liquidation of farm debt from $14 billion in 1920 to $9 billion in 1940. In contrast, the post-World War II period was one of mixed experience for agriculture. Farm debt expanded at about the same rate as net private debt, remaining at about 5 percent of the total.

The nonfarm, noncorporate sector of the private debt structure has accounted for between about 30 percent and somewhat over 40 percent of the net private debt since 1916. War and depression appear to reduce the relative importance of this sector, and peacetime prosperity to increase its relative importance. Thus, between 1916 and 1920, its proportion of net private debt fell from 37.2 percent to 32.2 percent; during World War II, it fell very slightly from 34.1 percent to 33.8 percent — practically stable. During the depression of the 1930's it fell from about 37 percent in 1930, to a low of 32.6 percent and recovered partially to 34.1 percent in 1940. In the post-World War I decade, however, it rose from 32.2 percent in 1920 to 37.0

TABLE 5

DISTRIBUTION OF NONFARM, NONCORPORATE DEBT
SELECTED YEARS, 1929-1954
(DOLLARS AND PERCENTAGE-WISE)

Year	Total Nonfarm, Noncorporate	Consumer Short-and-Intermediate Term	Mortgage 1-4 Family	Mortgage Multi-family and Commercial	Financial	Other Comercial Nonfarm
			(Billion of Dollars)			
1929	60.1	6.4	18.0	13.2	n.a.*	n.a.
1930	59.4	5.8	17.9	14.1	n.a.	n.a.
1935	40.4	4.9	14.7	10.1	n.a.	n.a.
1940	43.9	8.3	16.5	9.6	5.2	4.3
1945	47.4	5.7	17.6	9.3	10.3	4.4
1954	147.7	30.1	71.8	22.6	10.4	12.7
			(Percentage Distribution)			
1929	100.0	10.6	30.0	22.0	(37.4)	
1930	100.0	9.8	30.2	23.8	(36.2)	
1935	100.0	12.1	36.4	25.0	(26.5)	
1940	100.0	18.9	37.7	21.8	11.8	9.8
1945	100.0	12.0	37.3	19.6	21.8	9.3
1954	100.0	20.4	48.5	15.3	7.3	8.5

Source: Survey of Current Business, September, 1953, p. 19, May, 1955, p. 12.

*Not Available

percent in 1930; and after World War II, it rose from 33.8 percent in 1945 to 43.2 percent in 1954. (See Table 4.)

Distribution of nonfarm, noncorporate debt, 1929-1954.[2] The bulk of this portion of the private debt is composed of the debts of consumers, including the short- and intermediate-term cash and sales credit, and debt incurred through home mortgages as evidenced in Table 5 by the statistics on 1-4 family home mortgages. Both of these types of consumer debt have increased strikingly in importance since 1929, while mortgage debt on multi-family and commercial building has fallen somewhat.

The category listed as financial debt in Table 5 includes all debt owed to banks for purchasing or carrying securities, customers' debt to brokers, and debt owed to life insurance companies by policyholders. These present special problems of classification since, for example, debts incurred against the cash-surrender value of life insurance policies may be for business as well as consumer purposes.

Noncorporate, nonfarm commercial debt is the last of the categories shown in Table 5. Together, the financial and commercial debt have declined in relative importance considerably since 1929. Although the Department of Commerce does not attempt to separate them before 1939, it is likely that the decline can be explained largely by the decline in the use of credit for speculation in stock market securities since the 1929 stock market crash.

Distribution of net debt in the United States, 1916, 1929, 1954-Summary. The changing role of the various debtor groups in the United States is summarized in Table 6.

CHANGING PATTERNS IN THE FLOW OF FUNDS TO NON-FINANCIAL SECTORS OF THE ECONOMY, 1939-1953

The preceding section has shown trends in the distribution of outstanding public and private debt in the United States. Since outstanding debt is a cumulative total resulting from repayments and extensions of credit up to a given point of time, it fails to present clearly the changing flows of credit from year to year. For example, although the

[2]This breakdown is available only for the years since 1929.

TABLE 6

PERCENTAGE DISTRIBUTION OF NET DEBT IN THE UNITED STATES
1916, 1930, and 1954 (END OF CALENDAR YEAR)

Sector	1916	1930	1954
Public, Total	6.8	16.0	43.5
Federal	1.4	8.6	38.0
State and Local	5.4	7.4	5.5
Private, Total	93.2	84.0	56.5
Corporate	49.0	46.7	29.2
Noncorporate, Total	44.2	37.3	27.3
Farm	9.5	6.3	2.9
Nonfarm	34.7	31.0	24.4
Consumer short and intermediate term	n.a.*	3.3	5.0
1-4 Family Mortgage	n.a.	9.4	11.9
Multi-family and Commercial Mortgage	n.a.	7.4	3.7
Financial	n.a.	n.a.	1.7
Commercial	n.a.	n.a.	2.1
Total	100.0	100.0	100.0
Total (billion dollars)	$82.1	$191.0	$605.5

Source: Ibid.
*Not Available

United States Government is by far the most important single debtor in the country, it is not necessarily the largest borrower in any one year and, therefore, may not be the most important factor on the demand side of the funds market at that time. The recent development of "flow of funds" statistics by the Federal Reserve System attempts to fill this gap with the objective of pin-pointing the expansionary and deflationary sectors in the funds market.

Table 7 shows the net change in financial liabilities within the United States of consumers, corporate and non-corporate business, farm business, governments, and the rest of the world during selected years since 1939. Since corporations may obtain outside capital by floating stocks as well as by borrowing, the statistics for corporations include the issuance of stocks as well as of formal debt obligations.

It should be made clear that the esti-

TABLE 7

NET CHANGE IN FINANCIAL LIABILITIES OF NONFINANCIAL SECTORS
OF THE UNITED STATES ECONOMY
SELECTED YEARS, 1939-1953

	1939	1943	1946	1947	1953
Consumers	+1.2	- 0.8	+ 4.8	+ 7.5	+10.7
Corporate Business*	+0.8	- 0.8	+ 9.4	+12.3	+ 7.4
Noncorporate Business	-0.1	- 1.0	+ 2.1	+ 3.7	+ 3.5
Farm Business	-0.3	- 0.8	+ 0.2	+ 0.6	+ 1.0
Federal Government	+2.1	+54.6	-25.8	- 7.4	+ 5.3
State and Local Governments	+0.1	- 1.2	- 0.4	+ 1.6	+ 3.6
Rest of the World	-0.3	+ 1.0	+ 3.4	+ 8.0	+ 0.6
Total	+3.6	+50.2	- 6.0	+23.1	+32.1

Source: Compiled from Board of Governors of the Federal Reserve System, Flow of Funds in the United States, 1939-1953, December, 1955.
*The statistics for corporate business include the issue of stocks as well as bonds and other corporate debt.

mates are net, rather than gross. That is, they are the result of comparing the outstanding financial liabilities of each sector from year-end to year-end without indicating the extent to which the refunding of old debts or incurring of new debt was offset by matured or cancelled liabilities. For example, in the area of consumer short- and intermediate-term installment credit, a sub-group under consumer liabilities, figures are available to show that, in the course of 1953, $30.3 billion of new debt was extended and $26.8 billion repaid. The result was a net increase in financial liabilities, in this area, of $3.5 billion. The same result may also be achieved, as is done in the "flow of funds" statistics, by comparing the $22.2 billion of outstanding consumer installment debt at the end of 1953 with the $18.7 billion at the end of 1952.[3] The difference between the $3.5 billion and the $10.7 billion shown for consumers in 1953, according to Table 7, is accounted for by noninstallment short- and intermediate-term debt and by residential mortgage debt.

In the essentially depression year of 1939, the total appeal to the funds market was relatively small, and was dominated by the borrowing of the Federal Government and, to a lesser extent, by consumers and corporate business. Some sectors, in 1939, were even contracting their liabilities — noncorporate business, farmers, and foreign borrowers. In 1943, the middle of World War II, borrowing reached a peak, but it was almost entirely for government financing of the war effort, all other domestic borrowers using the opportunity to contract their liabilities. Foreign borrowing was a small factor in the market alongside the Federal Government.

In 1946, the first full postwar year, there was a net contraction of debt accounted for almost entirely by the Federal Government. Despite the apparent net contraction, private corporations were borrowing, and selling stock to finance a postwar expansion; and consumers and noncorporate business were borrowing substantial amounts. Foreign borrowing was also very significant in the total funds market. Similar trends continued in 1947, except that the decline in federal debt was much smaller, and that state and local governments entered the funds market as borrowers. All other sectors greatly increased their liabilities. The result was a net growth of financial liabilities of the nonfinancial sector of the economy.

The year 1953 saw consumer borrowers dominating the demand for funds, with the Federal Government re-entering the market as a borrower, and state and local governments and farmers increasing their outstanding liabilities. Corporate and noncorporate business, however, reduced their reliance on external sources of funds as compared with 1947, though remaining very important factors in the markets. Foreign borrowers returned to their more usual role as relatively minor elements in the funds market.

SUMMARY AND APPRAISAL

The historical statistics of outstanding debt in the United States reveal several very significant changes to have occurred in the distribution of the debt since before World War I. The most remarkable of these changes was the growth in importance of Federal Government debt from only 1.4 percent of the total net debt in 1916 to almost 40 percent in 1954. This made the Federal Government the largest single debtor in the economy. Corporate debt, which had accounted for 49 percent of the total net public and private debt in 1916, fell to just below 30 percent in 1954, but maintained its approximate relative importance within the private sector. Data on consumer debt for 1916 is not available in the estimates of the Department of Commerce, but it is evident that there has been a substantial increase in both consumer short- and intermediate-term areas and in residential mortgage debt since 1930. The combined figures for

[3]Board of Governors of the Federal Reserve System.

the consumer sectors increased from 12.6 percent of the net public and private debt in 1930 to 16.9 percent in 1954 despite a decline of nonfarm, noncorporate debt from 31.0 percent to 24.4 percent of total net debt in the same period. Farm debt, on the other hand, declined from 9.5 percent of total net debt in 1916 to 2.9 percent in 1954, and also fell from about 10 percent to about 5 percent of the private sectors' outstanding debts in the same period. (See Table 6.)

The "flow of funds" statistics, showing net change in financial liabilities of various sectors of the economy, provide other perspectives of the debt structure, as well as some interesting new classifications of economic sectors. The Federal Reserve System has, to date, made these figures available only for the period from 1939 to 1953. They bring together very conveniently a summary of the major inflationary and deflationary influences on the demand side of the funds markets in each year. They show, for example, the growth of total financial liabilities from year to year since 1947 and pinpoint the responsible sectors in each of those years. The consumer sector, for example, is highlighted by these statistics as one of the major sources of inflationary pressures on the demand side of the funds markets since World War II. They also bring out the increased reliance of business on external sources of funds as compared with the war and prewar periods. The trend toward growing pressure on the funds markets by state and local governments is apparent from the statistics, and the diminished importance of Federal Government borrowing is brought out clearly. Foreign borrowing, except for a temporary peak in the immediate post-World War II years, quickly resumed its relatively insignificant place in the funds market. Farm borrowing for production purposes has been growing slowly since the end of World War II, but remains relatively unimportant in the total demand for funds.

Conceptually, the Federal Reserve System has departed from the debt statistics of the Department of Commerce by isolating the farm business and the noncorporate business sectors. Furthermore, from the point of view of practical analysis of the influences on the funds markets, the innovation of including new issues of corporate stock along with formal debt obligations to determine net change in corporate financial liabilities from year to year is very useful.

As long as the "flow of funds" statistics lag so far behind current data in the markets, they will have only limited usefulness for business forecasting and as a guide to monetary and fiscal policy. Reliance will continue to be placed on the more scattered sources of data already available.

Philadelphia Business Index

The September 1950 issue of the Bulletin presented a new index of general business conditions in the City of Philadelphia. This series, prepared and since maintained by Robert T. Kline, was designed to reflect economic activity exclusively within the boundaries of the City of Philadelphia. It was originally based upon a combination of statistical data representing (1) industrial electric power sales; (2) indexes of employment and employee-hours; (3) department store sales[1]; (4) bank debits[2]; and (5) total construction. Because the method of reporting certain data is under revision by the originating agencies, the change in average weekly hours worked and the monthly change in total employment in the Philadelphia metropolitan area, both prepared by the Department of Research of the Federal Reserve Bank of Philadelphia, have been substituted for (2) above. This is a temporary expedient to maintain continuity of the index. The original data series will be restored after revision.

The following table presents the index for the years 1939 through 1955 and by month from May, 1955.[3]

Index of General Business Conditions, City of Philadelphia, 1947=100

Year	Index	Month	Index
1939	73	1955	
1940	77	May	124.8
1941	96	June	123.1
1942	99	July	127.8
1943	106	Aug.	128.1
1944	106	Sept.	129.9
1945	98	Oct.	128.6
1946	100	Nov.	125.9
1947	100	Dec.	123.5
1948	103	1956	
1949	97	Jan.	126.4
1950	108	Feb.	124.2
1951	111	Mar.	121.3p
1952	111	April	121.5e
1953	119	May	122.0e
1954	119		
1955	124		

p=preliminary
e=estimated. Based on currently published weekly indicators.

[1]The revised index of Department Store Sales, published by the Federal Reserve Bank of Philadelphia, has been used in the composite index since October, 1951.

[2]The revised Wholesale Price Index, all commodities, published by the BLS, is used beginning January, 1952 as a deflationary index for the Bank Debit Series.

[3]Kline, Robert T., "A Measurement of General Business Conditions in the City of Philadelphia." **Economics and Business Bulletin,** Temple University School of Business and Public Administration, Philadelphia, Pa., September, 1950, pp. 33-40.

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[1] See Volume 7, No. 1 for Index to Volumes 1-6, inclusively and Volume 7, No. 4 for Index to Volume 7.

[2] "The Philadelphia Business Index," is maintained by Robert T. Kline and appears as a regular feature in each issue.

[3] Reference numbers may be found in the Chronological Index.